Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) A computer-implemented distortion compensation method comprising:

determining an undisturbed phase for at least one of a first position indication signal and a second position indication signal;

determining an undisturbed amplitude ratio that relates the amplitude of the first position indication signal at a first frequency to the amplitude of the second position indication signal at a second frequency;

determining a disturbed amplitude and phase of the position indication signal; and

adjusting a position indication based on the disturbed amplitude and phase, the undisturbed amplitude ratio, and the undisturbed phase.

2. (Previously Presented) The method of claim 1 further comprising calculating a relationship between the phases of the first position indication signal and the second position indication signal.

3. (Original) The method of claim 1 further comprising:

determining a second undisturbed ratio that relates the amplitude of either of the first and the second position indication signals to the amplitude of a third position indication signal at a third frequency, and

adjusting a position indication is further based on the second undisturbed ratio.

4. (Original) The method of claim 1 wherein the first frequency is a superior harmonic of the second position indication signal and the second frequency is a subordinate harmonic of the first position indication signal.

5. (Original) The method of claim 4 wherein the superior harmonic is the fundamental frequency.

6. (Original) The method of claim 4 wherein the subordinate harmonic is a third order harmonic.

7. (Original) The method of claim 1 wherein the first frequency is less than the second frequency.

8. (Original) The method of claim 1 further comprising generating a plurality of frequencies using a multiple frequency waveform.

9. (Original) The method of claim 8 wherein the multiple frequency waveform is a chirped waveform.

10. (Original) The method of claim 1 wherein the selected first frequency and second frequency are harmonically related.

11. (Original) The method of claim 1 wherein the distortion compensation method is repeated for a plurality of position indication signals.

12. (Original) The method of claim 1 further comprising detecting the presence of an eddy current in a conductive object.

13. (Original) The method of claim 12 wherein detecting the presence of an eddy current includes monitoring a ratio of the amplitude of the first position indication signal and the amplitude of the second position indication signal.

14. (Original) The method of claim 12 wherein detecting the presence of an eddy current includes detecting a change in the undisturbed phase.

15. (Original) The method of claim 1 wherein determining the undisturbed phase includes measuring asymptotic phase values and using the asymptotic phase values to calculate the undisturbed phase.

16. (Original) The method of claim 15 wherein determining the undisturbed phase includes iteratively calculating phase values and adjusting an asymptotic phase value, the asymptotic phase value used to calculate the undisturbed phase.

17. (Original) The method of claim 1 further comprising receiving from a sensor the real and imaginary components of the first and second position indication signals.

18-37. (Canceled)

38. (Previously Presented) A computer assisted coordinate measurement system comprising:

a magnetic tracking system configured to:

determine an undisturbed phase for at least one of a first position indication signal and a second position indication signal; and

determine a disturbed amplitude and phase of the position indication signal; and

a computer configured to:

determine an undisturbed ratio that relates the amplitude of the first position indication signal at a first frequency to the amplitude of the second position indication signal at a second frequency; and

adjust a position indication based on the disturbed amplitude and phase, the undisturbed amplitude ratio, and the undisturbed phase.

39. (Previously Presented) The computer assisted coordinate measurement system of claim 38, wherein the computer is further configured to:

calculate a relationship between the phases of the first position indication signal and the second position indication signal.

40. (Previously Presented) The computer assisted coordinate measurement system of claim 38, wherein the computer is further configured to:

determine a second undisturbed ratio that relates the amplitude of either of the first and the second position indication signals to the amplitude of a third position indication signal at a third frequency, and

adjust a position indication is further based on the second undisturbed ratio.

41. (Previously Presented) The computer assisted coordinate measurement system of claim 38, wherein the first frequency is a superior harmonic of the second position indication signal and the second frequency is a subordinate harmonic of the first position indication signal.

42. (Previously Presented) The computer assisted coordinate measurement system of claim 41, wherein the superior harmonic is the fundamental frequency.

43. (Previously Presented) The computer assisted coordinate measurement system of claim 41, wherein the subordinate harmonic is a third order harmonic.

44. (Previously Presented) The computer assisted coordinate measurement system of claim 38, wherein the first frequency is less than the second frequency.

45. (Previously Presented) The computer assisted coordinate measurement system of claim 38, further comprising:

a waveform generator configured to generate a plurality of frequencies using a multiple frequency waveform.

46. (Previously Presented) The computer assisted coordinate measurement system of claim 45, wherein the multiple frequency waveform is a chirped waveform.